REMARKS/ARGUMENTS

Claims 1 through 20 were pending in this application. The present Amendment amends claims 1, 7, 11, 12, 14, and 17, cancels claim 13, and adds new claims 21 and 22. Reconsideration and favorable action are respectfully requested.

Amendments to the Specification

One matter is corrected in the Specification, as summarized in the following table:

Paragraph number	**Correction(s)**
0058	The text regarding the vertical high-pass filter is amended to state that the filter is applied across three line-interleaved pixels for consistency with the first sentence in paragraph 0059 and Figure 16A.

Allowable claims and claims pending but not addressed

The Examiner is thanked for the indication that claims 15-17 are objected to, and the present Amendment in part uses that indication to propose certain changes to claims in an effort to advance prosecution of this application.

Applicant also notes that claims 18-20 were pending at the time of the Examiner's December 2006 Action, but that Action did not address those claims.

Rejections Under 35 U.S.C. § 103

Independent claims 1 and 7, and dependent claims 11-14, are rejected under 35 U.S.C. § 103 as unpatentable over Watanabe (US 6,522,356) in view of Matama (US 5,905,817). Applicant has further amended both of these claims in an effort to clarify the arguments made in the previous response and in view of the Examiner's further comments in his December 2006 Action. Thus, Applicant respectfully requests withdrawal of this rejection for the reasons set forth below.

The Examiner sets forth legal instances where the "preamble is generally not accorded any patentable weight." However, Applicant respectfully submits that those instances do not apply to the present claims 1 and 7. Particularly, any terminology in the preamble that limits the structure of the claimed invention must be treated as a claim limitation.[1] Further, "the determination of whether preamble recitations are structural limitations can be resolved only on review of the entirety of the application 'to gain an understanding of what the inventors actually invented and intended to encompass by the claim.'"[2] Thus, in connection with the "entirety of the application," and starting from the title of the present Specification, there is no question that what is invented pertains to "Methods and Apparatus ***for Converting an Orthogonal Pixel Format to a Diamond Pixel Format***."[3] Further, the field of the Specification states that:

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[1] *See, e.g.*, *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d 1251, 1257, 9 USPQ2d 1962, 1966 (Fed. Cir. 1989). MPEP 2111.02.I.

> The present invention relates generally to a system and method for displaying digital data, and more particularly to a system and method ***for converting a standard orthogonal digital pixel format suitable for display on an orthogonal-shaped pixel array to a diamond-shaped pixel format for display on a diamond-shaped pixel array***.

The detailed description is replete with details as to this system and method and, thus, Applicant submits that the inventive scope is well established. Further, therefore, Applicant respectfully requests that the Examiner reconsider the decision to give no weight to the respective preambles of claims 1 and 7, as those preambles are directly consistent with what was invented, as indicated by the application as a whole, and they also are intertwined with elements in the respective claims. Also in this regard and as detailed below, the preambles introduce two different types of arrays, namely, an "orthogonal pixel array" and a "diamond-shaped pixel array," and each of claims 1 and 7 is further amended in their bodies to further define these arrays. These amendments, and the limitations they provide along with the remainder of the claim, including the preambles, cause the claims to be clearly distinguishable from the cited rejections. Thus, the preambles are not merely intended statements of use, but relate to structures, where the structures include the two above-introduced and later-defined arrays.

Given the preceding, claim 1 recites, in its preamble, "circuitry ***for converting*** digital data representing an ***image*** for displaying ***on an orthogonal pixel array to*** digital data suitable for displaying said ***image on a diamond-shaped pixel array***." Further, within its body, claim 1 recites "digital data signals representing said image for display on said orthogonal pixel array, said orthogonal pixel array comprising an integer *x* rows and an integer *y* columns", and claim 1 later recites "circuitry for sub-sampling said filtered data for use on a diamond-shaped array, said diamond-shaped array consisting of one half said integer *x* rows and one half said integer *y* columns,..." Thus, for either or both the claim preamble and body, there is structure that must be afforded consideration for patentability. In connection with this structure prior to the present amendment, the Examiner previously cited Watanabe as a primary reference and for showing various features, but Applicant respectfully submits that Watanabe does not show such features particularly with the present amendments, as detailed below.

Watanabe deals with color filters for use with imaging apparatus and mentions them numerous times. Indeed, Watanabe notes U.S. Patent 3,971,065, and again the Examiner is invited to review that patent as it illustrates, arguably better than Watanabe, the use of color filters by superimposing those filters on top of an imaging array of sensors.[4] Thus, the filters in Watanabe have nothing at all to do with, as recited in claim 1, ***converting*** digital data representing an ***image*** for displaying ***on an orthogonal pixel array to*** digital data suitable for displaying said ***image on a diamond-shaped pixel array***." The amended claim 1 orthogonal array "comprises an integer *x* rows and an integer *y* columns." Further, claim 1, in its body, also recites "circuitry for sub-sampling ***said filtered data*** for use on a diamond-shaped array, said diamond-shaped array consisting of one half said integer *x* rows and one half said integer *y* columns." The claim 1 filtered data is a result of the claim 1 IIR Filter which is "for providing a filtered data stream," and also as recited in claim 1 the IIR Filter receives "said stream of digital data signals" and those signals are, as recited, "for display on said orthogonal pixel array, said orthogonal pixel array comprising an integer *x* rows and an integer *y* columns." In other words, there is a direct relationship in claim 1 of data provided for one specific type of array (i.e., an orthogonal pixel array), a filter that receives that data and provides a resultant filtered data stream, and then circuitry for sub-sampling that very filtered data stream for use on a different oriented and sized array (i.e., a diamond-shaped array). These aspects are not shown, suggested, or taught in Watanabe.

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[2] *Id.*

[3] See title of the Specification.

Instead, the Examiner cites to Figure 1C of Watanabe as corresponding to the claim 1 "diamond-shaped pixel array." However, nowhere in Watanabe is there any discussion of a ***conversion*** of data for an orthogonal array to the diamond structure shown in Figure 1C, as recited by claim 1. Instead, it appears that the Watanabe Figure 1C is one of three alternative color filter arrangements, and not an end result array for which data is to be converted, and even further most certainly not having the now-recited arrangement of rows and columns relative to an orthogonal array as set forth in amended claims 1 and 7. Indeed, the Examiner proposes to consider Watanabe Figure 1C as a diamond array relative to the array shown in Watanabe Figure 8; however, note that both of those arrays have ***the same number*** of rows and columns, which is therefore distinguishable from that set forth in claims 1 and 7. Still further, Watanabe appears to suggest, as the Examiner is urged to independently confirm, that the orientation shown in Watanabe Figure 1C is just an alternative configuration of a color filter, but there is no conversion of anything else to that filter; presumably, the Figure 1C filter is to be used in place of the orientation of either its Figure 1A or its Figure 1B filters.[5] Thus, nowhere does Watanabe disclose, teach, or suggest a conversion as between its Figure 8 and Figure 1C, as is suggested by the Examiner.

Applicant also previously argued an additional point with which the Examiner has respectfully disagreed, but language directed to that point is further amended in an effort that upon reconsideration of the Examiner the earlier point is clear. Particularly, claim 1 recitates "circuitry for sub-sampling said filtered data for use on a diamond-shaped array ***by dropping data to be displayed for even pixels on all odd numbered orthogonal rows of said x rows and dropping data intended for display for odd pixels on all even numbered rows of said x rows***." The Examiner cites to Watanabe Figure 1C and

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[4] *See*, U.S. Patent 3,971,065, column 4, lines 50-55 and its Figures 3A and 3B.

[5] "FIGS. 1A through 1C show ***exemplary color filter arrangements*** used in a two-dimensional solid-state imaging apparatus according to the present invention, where the pitch of G pixels in the first direction is equal to that in the second direction." (Watanabe, col. 4, lines 61-65, emphasis added).

Watanabe col. 6, lines 1-13 and 40-43. There is absolutely no teaching in these cited lines that relates to the above-quoted language in claim 1; instead, the cited language relating to Watanabe Figure 1C again merely demonstrates that it is an alternative shaped filter and does not relate to sub-sampling data as between the two different array types recited in claims 1 and 7. Applicants fail to understand how these recitations in claims 1 and 7 are referred to by the Examiner as merely a "recitation of intended use" as they affirmatively recite structure, namely, "circuitry for sub-sampling," and then define how that sub-sampling is accomplished, where such sub-sampling is also thoroughly discussed in the Specification with nothing comparable or teaching this circuitry and its operations in Watanabe. With the now-amended relationship of the two different arrays in claims 1 and 7, Applicant respectfully hopes the Examiner appreciates the claimed functionality of ***dropping*** of data in the recited ***sub-sampling***. And, in contrast to dropping already-received data as claimed, Watanabe Figure 8 relates to the use of all data in a video signal from its Figure 7 apparatus, using the Watanabe color filter. In this context, Watanabe states:

> More specifically, referring to FIGS. 7 and 8, a video signal ***on each pixel is read at a time in a zigzag manner*** from two rows of pixel groups 301a and 301b connected to one vertical drive line 2 (see read group (1) in FIG. 8). Similarly, when a drive signal is applied to the next vertical drive line 2, a video signal ***on each pixel is read in a zigzag manner*** from two rows of pixel groups 301a' and 301b' connected to this vertical drive line 2 (see read group (2) in FIG. 8). Such a method for reading a video signal can be realized by contriving signal wiring in the case of an X-Y scan reading type imaging apparatus.[6]

Thus, in Watanabe, there is no teaching, discussion, or suggestion of sub-sampling or dropping data. Instead, Watanabe samples ***every*** pixel, and indeed in later embodiments appears to sample some pixels more than once (*see*, Watanabe Figure 12 and description thereof).

In view of the above, Watanabe fails to show numerous aspects of claim 1, and the remaining references discussed by the Examiner also do not show these aspects. Stated alternatively, therefore, even if the references were combined as suggested by the Examiner,[7] they do not show numerous details in claim 1. Thus, Applicant respectfully requests withdrawal of the rejection of claim 1, and its dependent claims 2-6, 11-12, and 14-22.

Amended claim 7 includes numerous recitations similar to those argued above as bases of distinction from Watanabe and, thus, Applicant respectfully requests withdrawal of the rejection of claim 7, and its dependent claims 8 through 10.

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[6] Watanabe, column 8, lines 32-42.

[7] Applicant also notes that there is no motivation, other than hindsight, to combine the references as suggested by the Examiner. For example, Matama also does not relate to conversion of data from orthogonal to diamond shape arrays and, thus, there is no mutual field of endeavor so as to combine it with Watanabe.

New Claims

New claims 21 and 22 are added and do not introduce new matter.

Claim 21 defines additional circuitry relating to a node N_1 in the claimed IIR Filter and has support, for example, in the Specification at page 15, line 3.

Claim 22 defines additional circuitry relating to a node N_3 in the claimed IIR Filter and has support, for example, in the Specification at page 16, lines 7-8.

Other Amendments

Claim 11 is amended for consistency with the amendment to claim 1 that relates to the integer y columns and the integer x rows.

Claim 12 is amended in a manner with support, for example, in the Specification at page 15, line 3, and claim 14, now depending from claim 12 (following the cancellation of claim 13), is amended for consistency with the amendments to claim 12.

Claim 13 is canceled without prejudice or disclaimer.

Claim 17 is amended to correct a "+" to a "-" in the Equation for consistency with Equation 2 in the Specification.

Fees

A Petition for a two month extension of time is submitted herewith, thereby extending the deadline to respond from March 8, 2007 to May 8, 2007. Further, a fee is due for one additional dependent claim. The Commissioner is authorized to charge the fee for said Petition and said claim, and any other fees necessary to effect the present filing, to Deposit Account 20-0668 of Texas Instruments Incorporated, as also shown in the Petition submitted herewith.

Conclusion

Applicant respectfully requests that a timely Notice of Allowability be issued in this case.

Respectfully submitted,

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The undersigned hereby certifies that this correspondence is being transmitted via PAIR e-filing, **on May 8, 2007,** to the United States Patent Office.

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